Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1 - 2. (Cancelled).

3. (currently amended) The method of claim [[2]] 16, wherein a plurality of state signals are generated, each successive state signal associated with an increased risk of atrial fibrillation correlating to increased divergence from said normal distribution.

4. (cancelled).

5. (currently amended) The apparatus of claim [[4]]17, wherein said state signal is generated so as to distinguish between at least three values representative of at least three degrees of deviation of said characteristic distribution from said normal distribution.

6. (currently amended) The apparatus of claim [[5]] 17, comprising visual display means actuated by means of said state signal.

7. (currently amended) The apparatus of claim [[6]] 17, wherein said visual display means includes a plurality of individual displays corresponding in number to the number of possible values of said state signal.

8. (currently amended) The apparatus of claim [[7]] 17, wherein said visual display means includes an LCD device having a plurality of individually activatable units.

9. (currently amended) The apparatus of claim [[4]] 17, comprising electrodes applied to the patient for deriving said heart potentials,

analog circuit means connected to said electrodes and including a preamplifier, an electronic filter and a main amplifier, and

digital circuit means including an A/D converter, a sample-and-hold stage, a memory which holds said normal distribution, and a microcontroller.

10. (currently amended) The apparatus of claim [[9]] 17, wherein said microcontroller is adapted to generate a signal fed back to said preamplifier for controlling the gain thereof.

11. (currently amended) The apparatus of claim [[9]] 17, wherein said microcontroller is adapted to generate a clock signal for controlling said A/D converter and said sample-and-hold stage.

12. (currently amended) The apparatus of claim [[4]] 17, comprising a battery for powering said analog and digital circuit means, and means for generating a warning signal if the voltage of said battery falls below a predetermined value.

13. (currently amended) The apparatus of claim [[12]] 17, further comprising means for actuating said warning signal generating means if said state signal assumes a critical value.

14. (currently amended) The apparatus of claim [[13]] 17, wherein warning signal generating means includes a visual display adapted to operate in a flash mode.

15. (currently amended) The apparatus of claim [[13]] 17, wherein warning signal generating means includes an audio signal generator.

16. (New) A method for detecting atrial fibrillation, comprising

a) repetitively obtaining a plurality of groups of n successive RR intervals from a patient's heart potentials, n being a natural number greater than 1,

b) defining a plurality of points in an n-dimensional space of numbers, each point representing one of said groups of n successive RR intervals, to form a characteristic distribution of said points, and calculating a virtual electronic two-dimensional scatter plot based on said RR intervals,

c) comparing said characteristic distribution with at least one normal distribution derived from a healthy heart by electronically checking said scatter plot for the presence of a prescribed geometrical point structure, and

d) generating at least one state signal representing the state of the heart from step c), said state signal actuating a visual display of state signal(s).

17. (New) An apparatus for detecting atrial fibrillation by the method of claim 16, comprising

a) means for repetitively obtaining a plurality of groups of n successive RR intervals from a patient's heart potentials, n being a natural number greater than 1,

b) means for defining a plurality of points in an n-dimensional space of numbers, each point representing one of said groups of n successive RR intervals, to form a characteristic distribution of said points and calculating a virtual electronic two-dimensional scatter plot based on said RR intervals,

c) means for comparing said characteristic distribution scatter plot with at least one normal distribution scatter plot derived from a healthy heart by electronically checking said virtual scatter plot for the presence of a prescribed geometrical point structure, and

means for generating a state signal representing the state of the heart from said means c), said state signals observable on a visual display on said apparatus.